anxiety, and even after the desire has been forgotten and the fear and anxiety dissipated, the disability is continued by the action of the autonomic system. Recent investigations have shown that many cases which had been diagnosed as suffering from globus hystericus have a spasmodic nervous contraction of the esophagus which interferes with deglutition.

In schizophrenia, or dementia precox, the theory of organ inferiority appears to fit the case as well as any other. The individual, having failed to develop a normal personality and being unable to meet the demands of adult life, creates a world of his own with hallucinatory and delusional experiences representing in symbolic form his wish fulfillments. As time goes on the dissociation becomes greater until he loses contact with his environment entirely as seen in the catatonic stupor. He regresses to a lower and easier level of existence, in some cases to the infantile state.

The depressions occurring in the involutional period present such a uniform picture of faulty metabolism and incomplete elimination one cannot doubt that there is an organic basis for the depressive somatic delusions which exist. Much research will have to be done before anything definite can be said on the subject.

In the psychoses associated with organic brain disease such as general paralysis of the insane, and arteriosclerotic conditions, the hallucinations and delusions are the result of degeneration of brain tissue and their character undoubtedly depends upon the location of the area involved.

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DOCTOR MOORE (closing)—This has been a very interesting paper to write. It was a difficult paper to write—difficult in that the idea to be expressed lies far back of our usual groove of medical thought.

Evidently I did not succeed very well in putting my idea into words, because the discussions of the paper, both those above quoted and those not reported, quite fail to expound the real matter. For example, Doctor Brush indicates that I "fail to take into account . . . our instincts."

On the contrary, one phase of my effort is directed toward finding the ultimate reason for our instincts. Far from not taking them into account, I rather accept them as things the origins of which are to be studied. According to the theory which this paper tries to make manifest, the instincts of all living things are the inherited results of ancestral experiences. These inherited results are real things and therefore must reside somewhere—in the brain, in the brain plus this or that organ or in the ultimate cellular makeup of brain, organ or complete soma. Possibly instincts are so complex that their ultimate seat is to be found in the total personality of the individual.

It seems easy to me to suppose that thought in all its phases is cellular in origin, and that the cells of origin of a particular type or quality of thought are the cells of the body which are particularly involved in the content of that thought.

Abortion Legalized—Russia, unafraid of experiment in government, has formed a commission for considering petitions of women who, for any cause, desire abortion. Eighty-three per centum of these petitions have received favorable action. In three years 55,320 authorized abortions have been done. In this great number there was no fatality. The operations are all free and are done in government hospitals. Within the same period the authorities of Russia learned of 66,786 abortions done by bunglers with 3000 deaths.

Not satisfied with the results of its trial of free abortions, Russia is now more actively teaching birth control and is experimenting with new methods of prevention. In all European countries there is increasing activity in teaching birth control. The United States is alone in forbidding the use of the mail to writings favorable to contraceptive methods. We, in a land of the free, practice the principle that the government must decide what the people may be permitted to know.—*Colorado Medicine.*

THE CLINICAL SIGNIFICANCE OF PULPLESS TEETH *

By J. MARK LACEY, M. D.
AND
CLAYTON R. JOHNSON, M. D.
Los Angeles

DISCUSSION *by E. F. Tholen, M. D., Los Angeles; Andrew B. Wessels, M. D., San Diego; Lloyd Bryan, M. D., San Francisco.*

IT is assumed that there is such a factor in the production of physical disability as focal infection, and that the teeth must always be suspected as a possible source. The object of this paper is to report from our personal clinical experience, the conditions under which we believe teeth should be condemned, and the results which were obtained by the procedures adopted.

BACTERIOLOGIC EVIDENCE OF INFECTION

In 1924 Dr. Russell Haden [1] of the University of Kansas Medical School reported an extensive study concerning the bacteriologic findings of pulpless teeth as compared with evidence of infection as commonly interpreted on the radiograph. His conclusions were summarized as follows:

"The incidence of infection is almost as high in the radiographic negative group as in the radiographic positive group. There is a very sharp limitation to the translation of radiographic evidence of infection into terms of bacteria.

"In many cases the radiographic negative tooth is a far greater source of systemic infection than the radiographic positive tooth, since in the former there may be little resistance to infection."

CLINICAL RECOGNITION OF INFECTED TEETH

Previous to the publication of these conclusions only the radiographic positive teeth were considered by us as active foci of infection. Such evidence, as commonly interpreted, is characterized either by absorption of, or by increased density of the periapical tissue. Pulpless teeth which did not show evidence of periapical changes on the radiograph were not sacrificed.

In our own practice the results of this procedure were only partially satisfactory. We could come to no definite conclusion clinically as to what part pulpless teeth actually did play in the production of physical disability. During the past two years our procedure has been to suspect all pulpless teeth regardless of the periapical changes on the radiograph, as well as all teeth showing extensive marginal absorption of the alveolar process.

In carrying out this procedure it was necessary to secure the absolute cooperation of a competent dentist who held similar views. Radiographs were indispensable. The majority of pulpless teeth had root canal fillings, which gave positive shadows on the radiographs. Marginal absorption was also readily demonstrated. Teeth with large fillings or crowns were considered as suspicious and were referred to the dentist for vitality tests. The gin-

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* Read before the Innominate Society of Los Angeles, March 9, 1927.

gival margins were also closely examined for evidence of infection.

COMMENTS ON FIFTY SELECTED CASES

From our records we have selected fifty cases with complete records. All of these patients have been studied in detail, and they have been selected because of the presence of pulpless teeth, pyorrhea, or both, were the only positive physical signs or evidence of an exciting factor in the production of the disability. For presentation, these cases have been classified into the following groups, according to their cardinal symptoms:

1. *Neuralgia*—Usually characterized by recurring headaches, pain in the back of the head and neck, shifting pains in the muscles and joints, a generalized feeling of ill health, and, in a number of cases, a genuine sciatica.

Of this type there were twelve cases, eleven of which were completely relieved of all symptoms, and one definitely improved.

Typical Case—Male, age 31. Two months previous to consultation developed numbness, accompanied by pain and tenderness over the outer and posterior part of the left thigh. These symptoms subsided after about four weeks and recurred again about two weeks later. There was considerable pain in the back of the head and neck, he was very nervous, had lost considerable weight, and complained of a general feeling of ill health. The general physical and laboratory examinations were negative. Radiographic examination of the teeth revealed three that were pulpless.

Treatment: The three pulpless teeth were extracted. Symptoms were exaggerated for a time. Following this there was a gradual improvement with relief from all distressing symptoms, and there had been no recurrence nine months later.

2. *Neurasthenia*—Usually characterized by a state of nervous and mental exhaustion, headache, insomnia, loss of appetite and weight, indigestion, and at times, circulatory disturbance.

In this group there were fourteen cases, eight of which were relieved of all symptoms, and six definitely improved.

Typical Case—Female, age 29. Complained of nervousness, inability to eat, weakness, insomnia, frequent colds, constipation and abdominal distress.

Physical examination: Weight, 100 pounds, or about twenty pounds below average; pulse, 118; blood pressure, 100; teeth in poor condition. The remainder of the physical and laboratory examination was negative. Fluoroscopic examination of the gastro-intestinal tract showed a high degree of gastro-enteroptosis combined with a general sluggishness of motility. Radiographic examination of the teeth revealed four that were pulpless.

Treatment: The four pulpless teeth were extracted and the patient was put to bed on a high caloric diet. Within six weeks she had gained twelve pounds in weight and was completely relieved of all distressing symptoms.

3. *Gastro-Intestinal Distress*—Usually characterized by heartburn, gas on the stomach and bowels, distress without direct relation to type of food or time of taking food, and rarely with demonstrable localized abdominal tenderness. The symptoms were so distressing in all of these cases as to warrant a complete x-ray study of the gastro-intestinal tract.

In this group there were ten cases, all completely relieved.

Typical Case—Male, age 25. Had complained of stomach trouble for six months, characterized by distention of the abdomen with gas, accompanied by acute distress. The distress came on at any time of the day or night, regardless of meals or type of food. He had never noticed any soreness in the abdomen. Bowels were somewhat costive. The remainder of the physical and laboratory examination and the gastro-intestinal x-ray examinations were negative. Radiographic examination of the teeth showed the lower left second molar pulpless.

Treatment: The pulpless tooth was extracted, and dietary management of the constipation was advised. One week later the distressing symptoms had all disappeared and have not recurred six months later.

4. *Hypertension Accompanied by Headaches, Dizziness, Weakness, and Variable Gastro-Intestinal Symptoms*—Of this type there were six cases, all definitely improved.

Typical Case—Female, age 55. Complained of headaches, dimness of vision, weakness, palpitation, and gastro-intestinal distress.

Physical examination: Blood pressure, 275-140. Otherwise negative. Laboratory examination negative. Fluoroscopic examination of the heart with orthodiagraphic tracing showed a hypertension silhouette with all diameters of the heart increased.

Radiographic examination of the teeth showed three pulpless and advanced generalized absorption of the alveolar margins.

Treatment: All of the teeth were removed. The patient was placed on a low protein diet and potassium iodid.

Within three days the blood pressure had dropped to 210-130, and had remained so several months later. The distressing symptoms all promptly disappeared.

5. *Low Back Pain*—Three cases all completely relieved.

Typical Case—Male, age 60. Complained of lumbar pain for about two months. There was no history of previous injury. The pain was greatly exaggerated on arising from a sitting position. No other complaint.

The general physical examination and laboratory examination was negative excepting for advanced pyorrhea about all of the teeth.

Treatment: All the teeth were extracted, which resulted in complete recovery.

Besides the above cases there were two with a very definite toxic erythema and two with acute exacerbation of a chronic arthritis. The toxic erythema with the accompanying symptoms was entirely relieved, also acute symptoms of the arthritis.

CONCLUSIONS

1. Radiographic examination of all the teeth and edentulous areas, combined with the clinical examination by a competent cooperative dentist, is essential in searching out foci of infection about the teeth.

2. In the interpretation of radiographic evidence of infection all pulpless teeth and all teeth showing extensive absorption of the alveolar margins must be considered as active sources of infection.

3. Judging from clinical results obtained in our own cases, it is our contention that the removal of all pulpless teeth and of all teeth showing exten-

sive infection of the gingiva and alveolar margins, is entirely warranted, as prophylactic, as palliative and as curative measures.

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DISCUSSION

E. F. THOLEN, M. D. (1136 West Sixth Street, Los Angeles)—Doctors Lacey and Johnson have shown a comprehension of the pathology of the mouth not often fully understood by the general practitioner of medicine. The study of their paper will prove helpful to both the physician and dentist. I agree in the main with all that has been said in the paper, but my results from the removal of foci of infection have not always been as successful as I had hoped they would be. There are failures following the extraction of teeth, especially in such conditions as neuralgia, arterial hypertension, chronic nephritis, neurasthenia, and diabetes. I cannot agree with the conclusion that we are warranted in removing pulpless teeth as a prophylactic measure. I believe that pulpless teeth, the roots of which show a live peridental membrane about the apex and a root canal that can be filled, should be treated, filled and retained, providing the patient is not suffering from any systemic disease that could be influenced by a focal infection.

ANDREW B. WESSELS, M. D. (1305 Medico-Dental Building, San Diego)—The mouth and jaws have the natural protection of a very rich blood supply. It is logical that an infection which could become established in the teeth would have considerable invasive power and readily metastasize; thus establishing a secondary infection in a field of lesser vascularity and greater susceptibility, according to the inherent susceptibility or immunity of the patient. The attention of the profession has frequently been called by men devoting their time to research in this field that the radiogram cannot indicate the amount of virulence of the infection nor the degree of susceptibility to the infection; and that some devitalized teeth showing little or no periapical involvement are frequently the greatest offenders. If Doctors Lacey and Johnson are mistaken in their conclusions that all pulpless teeth and all teeth showing extensive infection of the gingivae and alveolar margins should be removed, it is a mistake favoring the side of the physical factor of safety and may offset the occasional unnecessary loss of a useful unit of mastication which loss may be avoided by investigating other possible foci. However, I do not agree with Doctors Lacey and Johnson in such a conclusion, and I do know that many cases showing extensive marginal destruction can be successfully operated unless there is an involvement of the bone between the bifurcations of the multirooted teeth. I do not believe that in the absence of systemic involvement that all pulpless teeth should be removed as a prophylactic measure. However, it is well to bear in mind that while dental infection may have been the primary etiological focus, an established secondary infection may not clear up even though the primary focus is removed. I believe that intelligent treatment must come through careful investigation of each individual case and that the cooperation of a competent dentist is invaluable.

LLOYD BRYAN, M. D. (135 Stockton Street, San Francisco)—The authors' assumption that the incidence of infection in pulpless teeth is almost as high in the radiographic negative group as in the radiographic positive group is not confirmed; but the clinical experience of our best dental surgeons and bacteriological confirmation certainly cannot be accepted without question on account of the almost impossible task, at least under present conditions, of obtaining uncontaminated culture from an extracted tooth.

The principal if not only function of the pulp is to form dentine. Is it fair to assume that a tooth with this dentine forming substance removed and replaced under aseptic condition is dead and infected when the vital peridental membrane is intact? Most dental surgeons do not hesitate to remove a pulp when it has passed its useful period and the restoration of a satisfactory denture requires it. In the hands of competent dentists many of the frankly infected teeth can be restored to normal clinical and radiological appearance. The teeth have a double formative and nutrient supply in the pulp and peridental membrane, and this latter membrane continues its supporting and protective function after the pulp has been removed. Many authorities believe that pyorrhea is the result rather than the cause of a general systemic condition.

The wholesale removal of pulpless teeth and the substitution many times of inefficient uncomfortable appliances may cause havoc with the nervous system or general body health. There are many healthy patients with extremely bad mouth hygiene and infected teeth and many a case of arthritis with perfectly healthy teeth.

In practically all the authors' examples the patients were subjected to other recognized forms of treatment besides removing the pulpless teeth. One wonders if rest and iodids would not have alone reduced the blood pressure in one example; and if rest, diet and relief of constipation in another might not have relieved the so-called "neurasthenic." In face of a general body disturbance the removal of pulpless teeth that are clinically and radiologically normal may at times be of benefit, but it also has potentialities of a great deal of harm. Let us be sure that there is not some other hidden source of infection.

AUTHORS (closing)—We have presented our conclusions based upon our clinical experience. Without further discussion we refer you to the observations and conclusions recently set forth by the department of dentistry of the Mayo Clinic under the direction of Doctor Gardner. Their evidence is far more convincing than we, with our limited facilities, could ever hope to demonstrate.

DIETETIC CONSIDERATIONS IN THE TREATMENT OF OBESITY*

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DISCUSSION *by Ernest S. du Bray, M.D., San Francisco; Esther B. Clark, M.D., Palo Alto; William M. Happ, M.D., Los Angeles.*

THE following considerations are based partly on a study of the literature of the subject, partly on experimental and clinical experience. The leading idea of the relative etiological importance of mineral and water metabolism in obesity has been widely discussed, and well summarized in the recent edition of Eugene DuBois' "Basal Metabolism in Health and Disease."[1] The practical application of these facts was on the point of being recognized when I took up the consideration of the matter. I will restrict myself as much as possible in the following discussion to fundamentals in the treatment of obesity, since the sub-

* From the Arrowhead Springs Metabolic Clinic, Arrowhead Springs.
* Read before the Los Angeles County Medical Society, October 20, 1927.